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CLAIMS

What is claimed is:

1. Use of oil-in-water emulsions containing at least water, emulsifiers and an oil phase as a reaction medium for enzyme catalyzed reactions, characterized in that the emulsion is produced by the P/T process and has a droplet size of 50 to 400 nm.
- 5 2. Use as claimed in claim 1, characterized in that the oil phase contains compounds selected from the group consisting of fatty acid alkyl esters and triglycerides.
3. Use claimed in claims 1 and/or 2, characterized in that emulsions
- 10 containing fatty acid alkyl esters corresponding to formula (I):



in which R¹ is a C₆-22 alkyl group and R² is a C₁-₄ alkyl group,

15 are used.

4. Use claimed in claims 1 to 3, characterized in that emulsions containing the oil phase in quantities of 10 to 80% by weight and preferably 20 to 60% by weight are used.
5. Use claimed in claims 1 to 4, characterized in that emulsions
- 20 containing water in quantities of 20 to 80% by weight, preferably 30 to 80% by weight and more particularly 30 to 70% by weight are used.
6. Use claimed in claims 1 to 5, characterized in that emulsions containing hydrophilic emulsifiers with HLB values of 8 to 18 in combination with hydrophobic co-emulsifiers are used.
- 25 7. Use claimed in claims 1 to 6, characterized in that emulsions of which the emulsifier systems have quantity ratios between hydrophilic emulsifiers and co-emulsifiers of 10:00 to 90:10 are used.
8. Use claimed in claims 1 to 7, characterized in that emulsions containing emulsifiers in quantities of 1 to 25% by weight, preferably in

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quantities of 5 to 20% by weight and more particularly in quantities of 5 to 15% by weight are used.

9. Use claimed in claims 1 to 8, characterized in that the enzymes are interfacially active enzymes, more particularly hydrolases and/or acyl transferases.
10. Use claimed in claim 9, characterized in that the hydrolases are selected from the group consisting of esterases, phospholipases, lipases and lipases/acyl transferases.
11. Use claimed in claims 9 and 10, characterized in that the hydrolases are selected from the lipases and/or lipases/acyl transferases obtainable from organisms from the group consisting of *Alealigenes*, *Aspergillus niger*, *Aspergillus oryzae*, *Aeromonas aerophila*, *Bacillus* species, *Candida albicans*, *Candida antarctica* (*Trychosporon oryzae*, *Pseudozyma antarctica*), *Candida antarctica*, *Candida cylindracea*, *Candida glabrata*, *Candida malosa*, *Candida parapsilosis*, *Candida lipolytica*, *Candida tropicalis*, *Candida viswanathii*, *Chromobacterium viscosum*, *Fusarium solani*, *Gastrichnum candidum*, *Issatchenkia orientalis* (*Candida krusei*), *Kluyveromyces marxianus* (*C. kefyr*, *C. pseudotropicalis*), *Mucor javanicus*, *Penicillium camemberti*, *Penicillium roqueforti*, *Pichia guilliermondii* (*Candida guilliermondii*), *Penicillium* pancreas, *Pseudomonas cepacia*, *Pseudomonas fluorescens*, *Rhizomucor michei*, *Rhizopus arrhizus*, *Rhizopus oryzae*, *Rhizopus niveus*, *Rhizopus javanicus* and *Thermomyces lanuginosus* and mixtures thereof.
12. Use claimed in claims 9 to 11, characterized in that the enzymes are used in a quantity of 0.001 to 20% by weight, expressed as pure enzyme or as enzyme preparation, based on the total quantity of oil phase used.
13. Use claimed in claims 1 to 12, characterized in that the enzyme-catalyzed reactions are hydrolysis, esterification or transesterification reactions.
14. Use claimed in claims 1 to 13, characterized in that cosmetic and/or

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pharmaceutical products and/or fine chemicals are produced in the enzyme-catalyzed reaction.

45. Use claimed in claim 14, characterized in that the cosmetic and/or pharmaceutical products and/or the fine chemicals are carolinoids, sterol-containing oil components and/or vitamin E.

5 46. A process for the enzyme-catalyzed esterification, transesterification or hydrolysis of fatty acid alkyl esters and/or triglycerides, characterized in that o/w emulsions according to claims 1 to 8 are used as the reaction medium.

10 47. A process as claimed in claim 16, characterized in that cosmetic and/or pharmaceutical products and/or fine chemicals are produced in the enzyme-catalyzed reaction.

48. A process as claimed in claim 16 and/or 17, characterized in that the cosmetic and/or pharmaceutical products and/or the fine chemicals are carolinoids, sterol-containing oil components and/or vitamin E.

15 49. A process as claimed in any of claims 16 to 18, characterized in that enzymes according to claims 9 to 12 are used.

20 50. (New) An oil in water (o/w) emulsion composition, comprising water, an emulsifier, and an oil phase, wherein the emulsion is produced by the phase inversion temperature process and has a droplet size of 50 to 400 nm.

25 51. (New) The emulsion composition of Claim 20, wherein the oil phase comprises compounds selected from the group consisting of fatty acid alkyl esters and triglycerides.

52. (New) The emulsion composition of Claim 20, wherein the emulsifier comprises fatty acid alkyl esters corresponding to formula (I):

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R¹-COO-R²

(i)

In which R¹ is a C₆₋₂₂ alkyl group and R² is a C₁₋₁₄ alkyl group.

- 5 23. (New) The emulsion composition of Claim 20, wherein the oil phase is
present in an amount of about 10 to 80% by weight of the total
composition.
- 10 24. (New) The emulsion composition of Claim 20, wherein the oil phase is
present in an amount of about 20 to 50% by weight of the total
composition.
- 15 25. (New) The emulsion composition of Claim 20, wherein the water is
present in an amount of about 20 to 90% by weight of the total
composition.
- 20 26. (New) The emulsion composition of Claim 20, wherein the water is
present in an amount of about 30 to 80% by weight of the total
composition.
27. (New) The emulsion composition of Claim 20, wherein the water is
present in an amount of about 30 to 70% by weight of the total
composition.
- 25 28. (New) The emulsion composition of Claim 20, wherein the emulsifier
comprises an emulsifier system comprising a hydrophilic emulsifier with a
hydrophilic/lipophilic balance value of 8 to 18, and a hydrophobic
emulsifier.
- 30 29. (New) The emulsion composition of Claim 28, wherein the ratio of the

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hydrophilic emulsifier to the hydrophobic emulsifier is 10:90.

30. (New) The emulsion composition of Claim 28, wherein the ratio of the hydrophilic emulsifier to the hydrophobic emulsifier is 90:10.

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31. (New) The emulsion composition of Claim 20, wherein the emulsifier is present in an amount of about 1 to 25% by weight of the total composition.

32. (New) The emulsion composition of Claim 20, wherein the emulsifier is present in an amount of about 5 to 20% by weight of the total composition.

33. (New) The emulsion composition of Claim 20, wherein the emulsifier is present in an amount of about 5 to 15% by weight of the total composition.

15 34. (New) The emulsion composition of Claim 20, further comprising an interfacially active enzyme comprising hydrolases and/or acyl transferases.

20 35. (New) The emulsion composition of Claim 34, wherein the hydrolases are selected from the group consisting of esterases, phospholipases, lipases and lipases/acyl transferases.

25 36. (New) The emulsion composition of Claim 35, wherein lipases and/or lipases/acyl transferases are obtained from organisms selected from the group consisting of *Alcaligenes*, *Aspergillus niger*, *Aspergillus oryzae*, *Aeromonas aerophila*, *Bacillus* species, *Candida albicans*, *Candida antarctica* (*Trychosporon oryzae*, *Pseudozyma antarctica*), *Candida antarctica*, *Candida cylindracea*, *Candida glabrata*, *Candida maltosa*, *Candida parapsilosis*, *Candida lipolytica*, *Candida tropicalis*, *Candida viswanathii*, *Chromobacterium viscosum*, *Fusarium solani*, *Geotrichum*

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candidum, Issatchenkovia orientalis (Candida krusei), Kluyveromyces marxianus (C. kefyr, C. pseudotropicalis), Mucor javanicus, Penicillium camemberti, Penicillium roqueforti, Pichia guilliermondii (Candida guilliermondii), Porcina pancreas, Pseudomonas cepacia, Pseudomonas fluorescens, Rhizomucor miehei, Rhizopus arrhizus, Rhizopus oryzae, Rhizopus nivetus, Rhizopus javanicus and Thermomyces lanuginosus and mixtures thereof.

5 37. (New) The emulsion composition of Claim 34, wherein the enzymes
10 are present in an amount of about 0.001 to 20% by weight, and expressed
 as pure enzyme or as enzyme preparation, based on the total amount of oil
 phase present.

15 38. (New) The emulsion composition of Claim 20, wherein the
 composition is used in an enzyme-catalyzed reaction selected from the
 group consisting of hydrolysis, esterification, and transesterification

20 39. (New) The emulsion composition of Claim 38, wherein a cosmetic,
 pharmaceutical, or fine chemical product is produced in the enzyme-
 catalyzed reaction.

25 40. (New) The emulsion composition of Claim 39, wherein the cosmetic,
 pharmaceutical, or fine chemical comprises a carotenoid, a sterol-containing
 oil component and/or vitamin E.

30 41. (New) A process for the enzyme-catalyzed esterification,
 transesterification or hydrolysis of fatty acid alkyl esters and/or triglycerides,
 wherein the o/w emulsion according to Claim 20 is used as the reaction
 medium.

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42. (New) The process of Claim 41, wherein a cosmetic, pharmaceutical, or fine chemical is produced in the enzyme-catalyzed reaction.

5 43. (New) The process of Claim 42, wherein the cosmetic, pharmaceutical, or fine chemicals comprises a carotenoid, a sterol-containing oil component, and/or vitamin E.

44. (New) The process of Claim 41, wherein the enzymes are interfacially active enzymes comprising hydrolyases and/or acyl transferases.